

# FAULT DETECTION AND ISOLATION IN AN OPTICAL NETWORK

## ABSTRACT OF THE DISCLOSURE

An apparatus and method for fault detection and isolation in an optical network is disclosed in which each node determines an appropriate response to a line fault or an equipment fault, obviating the need for a central computer to coordinate the actions of each node in response to a fault. Each network node includes a local controller and restoration elements for detecting and responding to faults. Each local controller correlates a first set of optical characteristics measured by optical detectors with the local node with a second set of optical characteristics for the channels reported to the local node from an upstream optical element, such as a neighboring upstream node, to determine if a line switch or equipment switch is required. In a preferred embodiment, each node is communicatively coupled to its neighboring node via an optical supervisory channel, with the neighboring nodes communicating status messages and data on channel characteristics via the optical supervisory channel.

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